Project Design Phase-Part 1

Proposed Solution

Date	12 May 2023
Team ID	NM2023TMID00662
Project Name	Smart City Waste Management System With Connected Trashcans
Maximum Marks	

The Internet of Things (IoT) is a concept in which surrounding objects are connected through wired and wireless networks without user intervention. In the field of IoT, the objects communicate and exchange information to provide advanced intelligent services for users.

This project deals with the problem of waste management in smart cities, where the garbage collection system is not optimized. This project enables the organizations to meet their needs of smart garbage management systems. This system allows the user to know the fill level of each garbage bin in a locality or city at all times, to give a cost-effective and time-saving route to the truck drivers.

OBJECTIVES

The key research objectives are as follows:

• The proposed system would be able to automate the solid waste monitoring process and management of the overall collection process using IOT (Internet of Things).

• The Proposed system consists of main subsystems namely Smart Trash System(STS) and Smart Monitoring and Controlling Hut(SMCH).

• In the proposed system, whenever the waste bin gets filled this is acknowledged by placing the circuit at the waste bin, which transmits it to the receiver at the desired place in the area or spot.

• In the proposed system, the received signal indicates the waste bin status at the monitoring and controlling system.

PRODUCT FEATURES

With the web application, the administrator will be able to search for dustbins. The result will be based on the criteria the user inputs. There are several search criteria, and it will be possible for the administrator of the system to manage the options for those criteria that have that.

The result of the search will be viewed either in a list view or in a map view, depending on what criteria are included in the search.

• City administration needs an understanding of the big picture, generating reports, control over pricing etc.
• District administrations are interested in controlling the process of waste collection, checking the quality of service (all waste collected, all in time, waste collected cleanly, waste transported to special places), quick and legal ways for solving disputes and problems

• Municipalities can also deploy and maintain smart city infrastructure like capacity sensors in waste bins and wireless networks for data transferring.
• Waste trucks owning companies need a platform for organizing and optimization of their business process in general without serious investments in developing, deploying and supporting their own system. Such a system must include effective dynamic routing based on IOT data for the truck fleet. Besides, controlling drivers and tracking the fleet is also an important issue.

Arduino Uno
Arduino Uno is a microcontroller board. It has 14 digital input/ output pins (of which 6 can be used as PWM outputs), 6 analogue inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect

it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started.. You can tinker with your UNO without worrying too much about doing something wrong, in the worst case scenario you can replace the chip for a few dollars and start over again.

Application

The project design is a part of the implication that can be used to improve the waste management of a locality. All the technical aspects have been thoroughly designed keeping all the constraints in mind. The project resolves around whether the project will be able to meet the future needs of the users. This project-based on IoT gives users the freedom of changing hardware as well as software specifications as per the arising need.

This project here is a model of the large scale application which spans pan India in different smart cities. The implementation of this project has been divided into various phases

Starting from the metropolitan cities and moving towards the concept of smart cities, it will also cover small towns and tier III cities in later phases. At present, we are here to display the live working of the model and give an idea about the actual implications